

Serial No. 09/998,334

REMARKS

In the Office Action of May 8, 2003, claims 1-4 and 8 were rejected under 35 U.S.C. 102(b) as being anticipated by Giavargizov et al. (U.S. patent 5,825,122). Applicant respectfully disagrees and submits that Giavargizov is insufficient to create a prima facie case of obviousness because Giavargizov does not discuss or disclose defects.

In fact Applicant respectfully submits that Giavargizov's method of fabrication does not rely on defects. Although Giavargizov does not describe the fabrication method used to create the matrix of field-emission cathodes, Giavargizov does describe that the silicon whiskers are epitaxially grown on the single crystalline silicon substrate. Col. 5 lines 47-51. Such epitaxial growth does not rely on defects. Applicant creates nanotips by creating perpendicular defects in the crystalline structure and etching around those defects. Thus the position of the nanotips correspond with the defects. Giavargizov neither describes, discloses nor suggests a structure that positions cathodes to correspond with defects.

New independent claim 24 also includes the limitation of a nanotip corresponding to a defect which is not shown in Giavargizov and is thus also believed to be patentable. All remaining pending claims depend on independent claims 1 or 24 and thus are believed to be patentable. However, each dependent claim provides additional basis for patentability.


In particular, the Office Action rejects claims 5-8 as having no functional difference over Giavargizov et al. because it was maintained that a semiconductor material of Gallium Nitride would be equivalent to the Silicon material of Giavargizov and that the selection of Gallium Nitride is merely a design choice. Applicant respectfully disagrees. It is important that in Applicant's design, that the defect be approximately perpendicularly oriented with respect to the interface between a substrate and the nanotip growth material. In order to form such defects, particular crystalline structures are needed. GaN on a sapphire substrate has been found to result in such defects.

Serial No. 09/998,334

Giavargizov's epitaxial growth does not depend on defects. Thus, when creating the structures described in Applicant's invention, including a nanotip positioned with defects in the crystalline material, the choice of crystalline material is not merely a design choice.

In view of the preceding amendments and remarks, Applicant respectfully submits that independent claims 1 and 24 are allowable over the cited prior art references. All remaining claims depend on independent claims 1 and 24 and thus are also believed to be allowable over the cited prior art references. Each dependent claim provides additional basis for patentability. If Examiner believes that a teleconference would facilitate prosecution of this application, Applicant respectfully requests that the Examiner contact the undersigned.

Respectfully submitted,

  
Kent M. Chen  
Attorney for Applicants  
Registration No. 3030  
(310) 333-3663  
August 8, 2003

FAX RECEIVED  
AUG 8 2003  
TECHNOLOGY CENTER 2800

OFFICIAL